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MORGANTOWN

ARIETIES OF *Fruits* for West Virginia

BY H. E. KNOWLTON

AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, WEST VIRGINIA UNIVERSITY
F. D. FROMME, DIRECTOR
MORGANTOWN

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Varieties of

Fruits for West Virginia

I. THE TREE FRUITS

IN the planning of new orchards, the proper selection of varieties should always be given careful consideration, for this often determines the success or failure of the venture. Many instances might be given of failures in the orchard business due to choosing varieties of poor quality or those ill-adapted to the purpose or to the locality.

Select Varieties That Are Adapted

The varieties adapted to the region and locality should be ascertained. For example, the McIntosh apple should not be planted in West Virginia, because when grown here it colors poorly, drops prematurely, and is only fair in quality. It thrives best in the Great Lakes Region and in New England. The Albemarle Pippin, though adapted to this general region, should be planted only in the Albemarle section of Virginia where soil and local climatic conditions are peculiarly suited to it. If possible, varieties of known adaptation should be considered first. Varieties untested in the general locality should not be planted extensively, particularly if they have a reputation for being sensitive to soil or climatic requirements.

Fewer Varieties Are Being Grown

Today there are fewer varieties from which to choose, so the problem of selection is not as difficult as it was twenty-five years ago when hundreds were being grown and hundreds described in pomological literature and in fruit catalogs. This trend toward fewer varieties is shown in the nursery catalogs. Thus, in a 1916 catalog of a leading nursery, 50 varieties of apple, 30 of peach, 16 of pear, 20 of cherry, and 27 of plum are listed, while in their 1927 catalog the same nursery lists, only 30 varieties of apple, 19 of peach, 15 of pear, 15 of cherry, and 19 of plum.

The gradual decrease in the number of varieties grown has come with commercialization of the fruit industry. Standardization of varieties, along with standardization of grades and packages, has been necessary for the economical production and selling of fruit. The

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peach industry has concentrated on the variety Elberta, and the pear industry on the Bartlett and Kieffer. The state of Washington has reduced its number of varieties of apples, from more than a hundred, to six, viz., Winesap, Jonathan, Delicious, Spitzenburg, Rome, and Stayman. These six varieties now constitute 90 percent of the state's total shipments. Other states are following the example of Washington. As a result one finds today that twelve varieties represent nearly 80 percent of the commercial apple crop of the United States.

Consider Market Possibilities

The variety problem is somewhat different for the grower who sells on a local market, and needs a number of varieties which ripen in succession in order to provide a constant supply for his customers throughout the season. He might also profit, however, by growing standard varieties, and concentrating on those that are the most profitable to the car-lot grower. If this is done, he has the advantage of being able to sell on the general market, in case his local market is over supplied.

The varieties described in this bulletin are those that the writer has had under observation for a number of years. Leading fruit growers of the state have also given their opinions of certain varieties. There are probably others that should be given a place here, but until firsthand knowledge is obtained it seems best to omit them.

THE APPLE

THE apple, the most cosmopolitan of fruits, is well adapted to all sections of West Virginia. It does not seem wise, however, to recommend the extensive planting of apple trees where the market is a general one. The apple industry at the present time is suffering from over-production with prospects that the situation will become worse as producing orchards increase in fruitfulness and as new ones come into bearing. The far-seeing orchardist, therefore, will not plant more trees, but instead will abandon those in his orchard which have little possibility of returning a profit due to unfavorable conditions, such as a poor site, wrong varieties, and many missing trees, and give better care to those that he knows, from their past performance, are most likely to bring a profitable return.

Guard Against Over-Production

The conditions that exist where local marketing is possible are quite different. Undoubtedly, there is considerable room for expansion in the business of apple growing in many sections of the state,

particularly in those localities where there is extensive industrial development. Orchardists in such sections should study the local situation carefully, however, before planning the establishment of new orchards.

Varieties of Apples

VARIETIES of apples that are under test in the Experiment Station orchards at Morgantown include: Alexander,* Arkansas (Black Twig, Paragon),* Arkansas Black,* Bailey Sweet,* Baldwin,* Benoni, Ben Davis,* Bismark,* Black Ben, Champion, Chicago, Cortland, Delicious,* Domine,* Early Harvest,* Early Melon,* Ensee, Esopus,* Fall Pippin,* Fall Rambo,* Fameuse (Snow),* Gano,* Gallia Beauty (Red Rome), Golden Delicious,* Golden Gate,* Golden Winesap,* Grimes,* Hubbardston,* Jonathan,* King David,* Maiden Blush,* Mann,* McIntosh,* Mother,* Newtown (Albemarle Pippin) Northern Spy,* Northwestern Greening,* Oldenburg (Duchess),* Red Astrachan,* Rhode Island Greening,* Romanite,* Rome,* Smokehouse,* Stark,* Stayman,* Summer Rambo,* Sweet Bough, Tolman,* Tompkins King,* Transparent,* Twenty-Ounce,* Wagner,* Wealthy,* Westfield,* Williams,* Willow Twig, Winesap,* Winter Banana,* and York.* The varieties of crab apples under test are Hyslop,* Transcendent,* and Whitney.* Only the varieties that seem to be worthy of consideration in future plantings are described herein. They are considered in order of ripening, in so far as possible.

Transparent (Yellow Transparent)

THE Transparent variety is of Russian origin, being in an importation of varieties made in 1870 by the United States Department of Agriculture. It is adapted to a wide range of conditions and is grown successfully in almost every apple growing section of the United States. It is perhaps our earliest commercial variety.

The fruit is medium to small on slow growing mature trees, especially if they are overloaded. The skin is tender and smooth with a thin, whitish bloom;† color is pale greenish yellow becoming nearly white when mature. Flesh is white, fine-grained, tender at maturity but becomes mealy when overripe. Flavor is sprightly subacid,‡ more

*Varieties in bearing upon which a report can be made. Other varieties were not old enough to bear at the time this report was prepared.

†A delicate, white, somewhat powdery substance on the surface of the fruit.

‡A term that means slightly acid but not noticeably sour.

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mild when fully mature. The variety is an excellent one for culinary purposes.

The trees bear at an early age—sometimes the second or third year after setting. Under good conditions crops are produced nearly every year. If overloading is permitted, a biennial bearing habit develops. With heavy production, thinning is generally necessary for size. Transparent is very susceptible to fire blight seemingly in all its forms. Blossom blight is very serious in some seasons.

Tranparent is an excellent variety for both the home and general market. One should be careful, however, not to overplant with it as the demand is limited. While it can be kept in cold storage for a few weeks it generally comes in competition with much better varieties when taken out.

Early Harvest

THIS variety, supposedly of American origin, has been in cultivation more than a hundred years. Nothing definite, however, is known of its origin.

The fruit is usually medium to below medium in size. Skin is thin, tender, smooth, pale waxen yellow, sometimes slightly blushed. Flesh is white, fine, crisp, juicy, briskly subacid at first but becoming milder as the fruit matures, excellent for culinary purposes and later, when mature, agreeable for dessert. The color is such that bruises show readily. Its season is about the same as that of Transparent.

The trees are medium in size, moderately vigorous, coming into bearing early, and yielding crops almost every year. The crop ripens unevenly which makes the variety undesirable for the general market.

Early Harvest has been planted to some extent in this state by growers catering to the local market where a dessert variety ripening with Transparent has been in demand.

Oldenburg (Duchess)

OLDENBURG is also a Russian variety, having been imported to England from Russia in 1815 and later brought to New England by the Massachusetts Horticultural Society. It has been disseminated in some sections under the name of "Duchess" or the full name of "Duchess of Oldenburg." In general, it is adapted to the same range of territory as Transparent. It is considered by some as the most valuable Russian variety in cultivation in the United States.

The fruit is medium to large and uniform in size and shape. Skin is fairly thick, tender and smooth; color is greenish-yellow, attractively splashed and striped with red. Flesh is tinged with yellow, fine, crisp, tender, and juicy. Flavor is very sprightly subacid. The variety is excellent for culinary purposes.

Oldenburg comes into bearing early and bears heavy biennial crops. The tree is vigorous while young but later becomes only a moderate grower. The fruit ripens unevenly, necessitating several pickings. Like Transparent it is very susceptible to fire blight. Thinning should be practised for both size and color. In the Station orchard it has not colored as well or attained the size that the writer has seen in the northern apple sections.

Oldenburg is an excellent variety to follow Transparent for the local market trade. As a commercial sort for the general market, it has not found much favor among West Virginia growers probably because of the invariably overloaded condition of the market each year during its season of ripening.

Williams (Williams Early Red)

ALTHOUGH Williams is an old variety, its good qualities have not been recognized until recent years. It was discovered growing wild on the farm of Captain Benjamin Williams of Roxbury, Massachusetts, more than 150 years ago.

Fruit is medium and under favorable conditions large in size. Skin is thick but not tough, smooth, light green covered with streaks and splashes of deep red. Flesh is greenish white sometimes tinged with red, firm, somewhat coarse and juicy at picking time, becoming more tender and eventually mealy when overripe. Flavor is a pleasant, mild, subacid one. Its firm flesh and fairly tough skin make it the best variety of its season for long shipment. It is most satisfactory for dessert.

The tree is a rather slow grower and does better when top worked on a vigorous stock. A strong point in its favor is the fact that its season of bloom is long, extending over into the season of late blooming varieties such as York and Rome. Fruit is very firm when ready to fall from the tree. Since it matures quite slowly after picking, it is exceptionally good for the early export market. It is comparatively free from fire blight. Some of its weak points are unevenness in ripening and a tendency to drop before fully colored.

Williams has been rather extensively planted in recent years by West Virginia growers and also by growers for the general market all the way from New Jersey to South Carolina. Of course, the crop over this wide area will not all be marketed at the same time, still it would appear that when all these new plantings come into maximum production, prices will not be as attractive as they have been in the past. It must be remembered that certain qualities of this variety mitigate against over-production—it is an excellent shipper and probably the best keeper of its season. Certainly the variety can safely be recommended for the local market trade.

Wealthy

RANKING with Transparent in its ability to thrive over a wide range of territory is the Wealthy, a seedling grown by Peter M. Gideon, of Excelsior, Minnesota. The American Pomological Society reports it as succeeding in twelve of the eighteen pomological districts of America.

The fruit is medium to large when properly grown but is likely to run small on old trees, particularly, if they are heavily laden. Skin is thin, tough, and yellowish green in color, blushed and marked with narrow stripes and splashes of red. Flesh is whitish, crisp, and juicy, with an agreeable sprightly subacid flavor. For culinary purposes it is one of the best varieties of its season (late summer). When mature it is a fairly good dessert apple.

The tree is moderately vigorous. It comes into bearing at an early age and generally produces annual crops, if not allowed to become overloaded. The variety is very susceptible to fire blight and cedar rust.

Wealthy has become quite a favorite with West Virginia growers for supplying both the local and general market. In recent years, however, the variety has not been profitable on the general market because of increased competition from other varieties and because the supply has generally been greater than the demand. It is, however, gaining in favor as an export variety, and still remains one of the popular varieties of its season for the local market.

Maiden Blush

MAIDEN BLUSH is one of the best known and one of the most popular varieties of its season. As early as 1817 the variety was in strong demand on the Philadelphia market and the best variety of its season for drying.

The fruit is medium in size, sometimes large, generally running very uniform in size and shape. Skin is thin, tough, pale waxen yellow with a bright pink blush. Flesh is white with a yellow tinge, fine, moderately crisp, tender, subacid. Its color is such that it shows bruises readily. Maiden Blush is particularly liked for culinary purposes as it cooks to a fine sauce.

The tree has an open habit of growth, is moderately vigorous, and comes into bearing rather young. It generally bears moderate annual crops. The tree is quite susceptible to fire blight, and to apple scab and apple blotch.

Maiden Blush has not become a popular commercial sort for the general market in this state. It is one of the best varieties of its season, however, for the local market and may be planted along with Wealthy for the late summer and early fall trade. The variety is not adapted for storage, as it loses quality rapidly after being picked.

Mother

THIS variety was described in 1848 as being "a new handsome late autumn and early winter apple of the highest quality." It originated at Bolton, Massachusetts. Although an excellent dessert apple, it is but little known in West Virginia.

The fruit is medium in size, sometimes large. Skin is rather thick and tough, waxy, golden yellow, nearly covered with bright deep red marbled and striped with carmine. Russet dots and a heavy scarf skin give it a rough appearance. Flesh is firm, rich, yellow, juicy, crisp, fine grained. Flavor is rich, aromatic, subacid, and satisfies the most fastidious. When not overripe it is excellent for all culinary purposes.

The tree is moderately vigorous, does not come into bearing young and commonly bears biennial crops. It is quite free from disease. It blooms late—nearly as late as Northern Spy and Rome Beauty.

While Mother cannot be recommended for the general market it should be more extensively planted for the home orchard and local market.

Northwestern (Northwestern Greening)

ORIGINATING in Waupaca County, Wisconsin, the Northwestern was introduced to the trade in 1872. Because of its hardiness it has been widely planted throughout the northern sections of the apple belt—Minnesota, Wisconsin, and adjoining states. It has been planted to some extent in West Virginia and neighboring states.

The fruit is large, with a thin, tough, smooth skin, pale yellowish green in color. Flesh is greenish white, firm, coarse, juicy, with a subacid flavor. It is rather poor in quality for dessert but cooks fairly well. It is especially desirable for baking because of its size and firmness.

The tree is large and vigorous and bears at an early age. Alternate light and very heavy annual crops are generally produced. The tree habitually forms narrow crotches with forks of equal size, being much worse than Delicious in this respect. Judicious pruning when the trees are young will help overcome this defect. The variety is especially susceptible to bitter rot and apple blotch.

There are quite a number of plantings of this variety in the Eastern Panhandle of West Virginia. In most years it has sold for attractive prices on the New York City market and in New England, because it is the earliest variety to ripen which is large enough for baking. The demand, however, is limited, consequently any marked increase in its planting would seem to be inadvisable at the present time.

Grimes (Grimes Golden)

FROM the consumers standpoint, Grimes is probably as popular as any variety now on the market, being excellent for both dessert and culinary purposes. The variety originated in Brooke County, West Virginia. Fruit from this tree was sold to New Orleans traders as long ago as 1804. It does best in the more southern apple districts. In the north it does not develop the best size, color, or quality.

The fruit runs medium to below medium in the average heavy crop. Skin is thin, rather tough, greenish yellow, generally becoming a deep yellow at maturity. Flesh is creamy yellow, firm, tender, crisp, juicy, with a rich, spicy, subacid flavor. Grimes generally keeps well in cold storage until midwinter. If the storage is too dry considerable shrivelling may occur. Grimes is also one of our most susceptible varieties to storage scald.

The tree is of moderately vigorous growth with stout, bushy branches which bear their crop without breaking. It commonly bears alternate heavy and medium crops. The fruit tends to run small on old trees, but by heavy pruning and by fertilization the size can be considerably increased.

Only one disease seems to be serious with Grimes. This is the so-called "collar rot" or "collar blight" which attacks the tree at the

base and kills it in several seasons. To eliminate this trouble nurserymen in recent years have been "double working" Grimes. While this has greatly lessened losses, it seemingly has not entirely eliminated the disease. Grimes also seems to be very susceptible to attack of the red bug.

At the time this bulletin was prepared Grimes ranked in importance among the first half dozen commercial varieties grown in West Virginia. Collar blight has been slowly reducing the number of trees, so a gradual decline in production of this variety may be expected.

Jonathan

THE first account of this variety was published in 1826. The original tree stood on the farm of Philip Rick, Ulster County, New York. It is supposed to be a seedling of Esopus Spitzenburg. It seems to find its best adaptability in regions other than that of its origin, reaching its greatest perfection in the valleys of the Ohio, Mississippi, and Missouri rivers. It has also been planted extensively in the Pacific Northwest.

Fruit is medium to rather small. Skin is thin, tough, smooth, and pale yellow, nearly covered with indistinct stripes and splashes of deep red, giving almost a blushed appearance. Flesh is yellowish often tinged with red, fine-grained, crisp, tender, juicy, with a sprightly, vinous, subacid flavor. This variety is excellent for both dessert and culinary purposes.

The tree is of moderate slender growth and comes into bearing early, producing nearly annual crops. The most serious weakness of the tree is its marked susceptibility to fire blight in all its forms. Another serious disease is the so-called "Jonathan spot" of the fruit, which seemingly is very hard to control. It is particularly serious when the fruit is allowed to remain on the tree too long. The variety is also very susceptible to powdery mildew, a disease which is difficult to control.

Jonathan, up to the time of this report has been one of the important commercial varieties in West Virginia. Because of serious losses from the two diseases previously mentioned, the variety is becoming less and less popular with the grower. Certainly in sections where these two diseases are very prevalent, the variety should not be planted either for the home or general market.

Delicious

THE Delicious was first brought to notice by Jesse Hiatt, of Peru, Iowa, in 1881. It was then a sprout about six years old which had come up from the roots of a Yellow Bellflower tree. It was commercially introduced in 1895 under the name "Delicious."

The fruit is medium to large and sometimes very large. Skin is thick, tough with a light yellow ground color, blushed, mottled with dull pink, and indistinctly streaked with crimson and darker red. The effect is very similar to Winesap in many specimens. Flesh is yellowish, firm, fine grained, juicy, becoming mealy from the core outward at maturity. Flavor is a mild subacid to almost sweet with a distinctive rich aroma. Specimens with poor color, however, are almost tasteless. The value of Delicious lies chiefly in its dessert qualities. However, there are many persons who do not like its perfumed richness. It is very unsatisfactory for culinary uses due to its lack of acidity.

The tree is vigorous and healthy, coming into bearing at a somewhat early age and producing moderate annual crops. Great care must be exercised in training and pruning the young tree because of its tendency to form narrow angle crotches with each fork of similar size. Such crotches are weak and generally split when the limbs later become heavily laden with fruit. The tree is quite resistant to blight, but susceptible to scab. It is an early bloomer, consequently it often suffers from severe frost injury.

Delicious has been heavily planted during the last ten years throughout the apple growing sections of the East and West. There is naturally a question in the minds of many regarding the permanency of the present attractive prices for this variety when all these trees reach maximum production. Delicious has been extensively advertised to the consumer which partially explains the heavy demand for it. Because of its characteristic shape it is easily recognized on the market. As a result of this, Delicious is probably better known by the customer than any other apple. Its failure as a culinary sort and the lack of quality in poorly colored specimens, of course, are serious drawbacks.

Starking

THE Starking apple appeared as a bud sport on a Delicious tree in the orchard of Lewis Mood, Monroeville, New Jersey, in 1922. Stark Brothers Nurseries introduced it in 1924.

Starking in every respect except color seems to be identical with Delicious. The apples color much earlier than Delicious and when mature are a solid red. This quality is a valuable one especially in localities where Delicious is likely to color slowly—in such sections Delicious is often left on the tree until overripe in order to get color. From all indications Starking will not have this fault.

Golden Delicious

GOLDEN DELICIOUS originated as a chance seedling in Clay County, West Virginia, on the farm of H. Mullens. It was brought to the attention of Stark Brothers Nurseries, who introduced it in 1916. It was given the Wilder Silver Medal by the American Pomological Society in 1920.

Fruit is medium to large. Skin is thin, tough, smooth, somewhat roughened by prominent raised russet dots, golden yellow in color, sometimes faintly blushed. Flesh is yellow, firm, crisp, but not tender, juicy, with a mild subacid flavor which resembles Grimes. It promises to be an excellent variety for both dessert and culinary purposes. Its storage limit is about the same as that of Stayman.

The tree is healthy and vigorous, comes into bearing early, and the young trees produce nearly annual crops. Final opinion on tree characters cannot be given, however, until the trees under observation are more mature.

Golden Delicious has been widely but not extensively planted in West Virginia. It promises to rival Grimes as the standard yellow winter variety because of its many points of superiority. It is larger, better in quality, and a longer keeper. It is also less subject to storage scald. Its tree characters, as far as can be judged from the young trees, are also decidedly better than those of Grimes. One of its chief faults is a lack of a smooth finish on the fruit due largely to its prominent russet dots. Golden Delicious shrivels in storage—particularly when picked in an immature condition, but if the golden yellow color is allowed to develop before picking little shriveling occurs.

Winter Banana

WHILE this variety originated on the farm of David Flory, Adamsboro, Indiana, about 1876, it was not introduced until 1890.

The fruit is fairly large to very large. Skin is smooth, moderately thick, tough, waxy, bright pale yellow with a beautiful pinkish red blush in most specimens. Flesh is yellowish, moderately firm, crisp,

tender, juicy, with a mild subacid, aromatic flavor. Winter Banana is highly esteemed for its dessert qualities by those who prefer a mild flavor, but has little value for culinary purposes. It keeps well until midwinter.

Trees are medium in size and of vigorous growth, coming into bearing early and yielding moderate to heavy annual crops. They seem to be somewhat immune to fire blight.

Winter Banana has been rather widely but not extensively planted in West Virginia. The fact that its color, like Maiden Blush, is such that it shows bruises readily, is one of its main defects. It is also likely to sunburn badly in the hot, sunshiny days of August and September. Undoubtedly, it is a good variety for the local market where there is a demand for a yellow apple. It is doubtful, however, if it can compete with the several attractive red dessert varieties of its season.

Stayman (Stayman Winesap)

THE Stayman originated from seed of a choice lot of Winesap grown in 1866 by Dr. J. Stayman of Leavenworth, Kansas. It first fruited in 1875. Its merits were not recognized until 1890 when two men, R. J. Black of Bremen, Ohio, and J. W. Kerr of Denton, Maryland, fruited the variety on top grafts.

This fruit is medium to large if trees are not too heavily loaded. Skin is rather thick, moderately tough, greenish yellow in color, often covered with a dull red indistinctly striped with dull carmine. The general effect is a light red. Flesh is yellowish, firm, tender and juicy, with a mild subacid flavor. Stayman is excellent for both dessert and culinary purposes. It keeps well until late winter.

The tree is vigorous with an open top and stout upright-divergent branches. It comes into bearing fairly early and yields moderate annual crops. Fire blight does not seem to attack it to any considerable extent. It is, however, susceptible to scab.

Stayman has been extensively planted in the Eastern Panhandle of West Virginia. These plantings are now beginning to produce heavily. Generally speaking, it is well liked by the growers. Its chief faults are lack of color in some seasons, a tendency to crack, and failure to set fruit in solid blocks due to self-sterility. It undoubtedly is one of the most promising of the newer varieties that have been planted in recent years, being a favorite on the general as well as on the local markets.

Rome (Rome Beauty)

ROME was originated by H. N. Gillett of Lawrence County, Ohio, and brought to the attention of the Ohio Convention of fruit growers in 1848. The original tree stood on the banks of the Ohio until 1860 when it was washed away by high water.

Fruit is medium to large. Skin is thick, tough, smooth, with a yellow ground color mottled and striped with bright red shading to a darker red. The flesh is somewhat coarse, firm, crisp, and moderately juicy until mature, when it quickly becomes dry and mealy. The flavor is a mild subacid one which becomes insipid when the apple becomes mealy. The variety is a good culinary one and is well liked for its dessert qualities until it becomes overripe. It stands rough handling well. Its commercial limit in storage is about March.

The tree is of vigorous growth tending to grow thick and bushy if not well pruned. It cannot be considered a very early bearer, but as soon as its bearing habit becomes established it produces nearly annual crops. Because of its habit of bearing good crops annually on terminals, it is one of our most fruitful and profitable varieties. Rome is probably the latest blooming commercial variety in this section and consequently its buds are seldom injured by frost. It is quite susceptible to fire blight, cedar rust, apple scab, and storage scald. The color is best on elevated land, low river bottom fruit often lacking color.

In the Ohio Valley section Rome is the leading commercial variety. It is a favorite because it is highly productive, adaptible to various soils and locations, makes an attractive appearance when placed on sale, and because it can be either barrel, basket, or box packed. This apple is well liked by the consuming public, especially in the industrial centers of Ohio and Pennsylvania where it finds its chief market. The variety seems to be better adapted to the Ohio Valley than to the Eastern Panhandle sections.

Bud sports of Rome have appeared in several sections of the country in which the color shows a higher development than in Rome. When well colored the fruit is a solid red without stripes or splashes. These sports, although they have a separate origin appear to be identical. One of them has been introduced as Gallia Beauty, still another as Red Rome. They seem to be the same as Rome in every character except that of color. Growers familiar with them say that they are superior to Rome.

York (York Imperial)

YORK takes its name from its place of origin on the farm of a Mr. Johnson, near York, Pennsylvania. Mr. Johnson's attention was brought to it by schoolboys visiting the tree in the early spring to get the apples that had been on the ground over winter covered with leaves. Mr. Jonathan Jessup began the propagation of it in 1830 under the name of Johnson's Fine Winter. It was known under this name for a time until the late Charles Downing after an inspection of specimens pronounced it to be imperial in its keeping quality and suggested the name York Imperial. It has been widely distributed through Maryland, Pennsylvania, and the Virginians, and has become one of the leading commercial varieties.

Fruit is medium to large when well grown. The skin is thin, tough, smooth, pale yellow, shaded and striped with bright pink to deep crimson. Flesh is yellowish, very firm, crisp, somewhat coarse, moderately juicy, with a pleasant but distinctive subacid flavor. The quality is excellent for sauce and pie as it retains its shape when cooked. It is considered one of the best for canning purposes. Its storage limit is slightly longer than that of Stayman. It is likely to scald badly in storage.

The tree is large, of dense, vigorous, bushy growth, comes into bearing moderately early, and yields heavy biennial crops. It seems also to be very long lived. By heavy pruning and fertilization it can be made to bear annually, but fruit is generally oversized and poor in color. Thinning is generally needed as the fruit tends to set in clusters. If thinning is not done the apples are likely to be uneven in size with many undersized, poorly colored fruits. Because of the bushy habit of growth of the tree much pruning is required to get size and color. It is moderately susceptible to fire blight. Cedar rust attacks it rather badly. It blooms late, consequently it is seldom caught by frosts.

York is probably the most important commercial variety in West Virginia. There is much dissatisfaction with it, however, as evidenced by the fact that few trees of this variety can be found in the younger plantings. Because of the immense size to which the trees grow the variety will produce in the crop year a heavier tonnage per acre than any other variety grown in this section. York will stand rough handling better than most varieties, sells well on the export market, and is a favorite variety with the canners. Its mediocre quality is against it,

however, especially when it comes into competition with varieties of higher quality such as Grimes and Stayman.

Arkansas (Mammoth Black Twig)

THIS variety originated near Rhea Mills, Arkansas, from seed planted about 1833. It is probably a seedling of Winesap which it markedly resembles. Nurserymen began the propagation of it about 1868. Arkansas is its correct name and the one officially adopted by the American Pomological Society. It is known to the grower and to the trade by the name "Black Twig." Another variety, Paragon, also a seedling of Winesap, has been confused with Arkansas. Paragon originated in Tennessee. The fruits of the two varieties so closely resemble each other that they seem almost identical. Some growers claim that Paragon is more productive than Black Twig.

Fruit of Black Twig is medium to large. Skin is thick, tough, becoming more or less oily in storage, with a dull yellowish green ground color overlaid with a dull light red shading to a darker red. Flesh is a greenish yellow, firm, crisp, somewhat coarse, moderately juicy, with a rich subacid flavor. It is excellent for both dessert and culinary purposes. The quality is not as high as either Stayman or Winesap. It scalds badly in storage. At picking time this variety is very hard and will stand considerable handling without being seriously injured. It ranks about with Winesap in keeping quality.

The tree is large, healthy, and vigorous with strong, stocky branches. Its bearing habit is variable. Trees in the Station orchards have borne moderate crops their ninth and tenth year. In other localities growers have reported a marked tardiness in coming into bearing. The fruitfulness of mature trees also differs widely, some growers reporting good productivity, others a lack of it. The majority of all reports, however, would indicate that the variety is a shy bearer in West Virginia. Arkansas is self-sterile. Undoubtedly, many of the cases of low yields are due to a lack of proper cross-pollination.

Arkansas is a variety that has so many good qualities in both tree and fruit that one hesitates to discard it, but because of lack of productivity it is likely to disappear eventually.

Winesap

NOT much is known as to the origin of this variety. Coxe, in 1817, mentions it as being "the most favored cider fruit in New Jersey." From this fact many writers have thought that to be the probable place of its origin.

The fruit is medium to small, rarely large. Skin is moderately thick, tough, smooth, glossy, yellowish green, blotched and indistinctly striped with crimson, deep carmine and purple. Flesh yellowish, firm, juicy, moderately coarse with a rich, sprightly subacid flavor. Winesap is an excellent dessert variety and excels also for culinary purposes.

The tree is smaller and not of as vigorous a growth as Stayman nor are the branches as stout and the leaves as large. Like Stayman, Winesap is generally free from attacks of fire blight, but is quite susceptible to apple scab.

Winesap, undoubtedly, ranks among the first half dozen varieties in West Virginia as judged by number of trees. It is very particular, however, as to soil and elevation, lacking color at low, and size at high, elevations and on poor soils. It generally colors better than Stayman. Many growers do not like it because of its low yielding ability—mainly due to small trees and small fruit. It probably is as completely self-sterile as any of the standard varieties of apple, consequently it must be planted adjacent to other varieties. Winesap keeps well, retaining its maximum quality in cold storage until almost midsummer. In the localities where it is adapted it is unexcelled for both the general and home market.

Varieties of Crab Apples

Transcendent

THE origin of Transcendent crab apple is unknown. The Prince Nurseries listed it in their catalog as early as 1844.

Fruit is medium to large. Skin is thin, clear bright yellow in color, blushed and splashed with bright red and overspread with bloom. It ripens in late August and September.

Tree is large, vigorous, comes into bearing early, and is a good producer. In the Station orchard it has been very susceptible to fire blight. It blooms early and consequently blossoms are often severely injured by frosts.

Because of its beautiful color and high quality Transcendent can be recommended where an early variety is desired. It ripens a little too early, however, for either the home or general market.

Hyslop

Hyslop is one of our oldest and best known varieties of crab apples, but its origin is unknown.

Fruit is above medium to large. Skin is pale yellow overspread with a dark red blush and with a thick bloom. Exposed fruits when fully mature are colored a solid dark red. Flesh is firm, fine grained, and juicy but becomes dry and mealy when stored. It ripens in late September.

The tree is vigorous, upright growing, begins to bear early, and seems to be a regular bearer. Its blooming period is later than that of Transcendent and it is not so susceptible to fire blight as is the earlier variety.

Hyslop is one of the most desirable varieties of its season for both the home and general market. Due to its lateness in ripening there is generally a greater demand for it than for Transcendent.

THE PEACH

The peach is the second tree-fruit crop in point of importance in West Virginia. Plantings are widely scattered, the large commercial plantings being east of the Alleghenies, in Hampshire, Mineral, Morgan, and Berkeley counties, with the small orchards catering to local market demands being found west of the mountains.

The total number of bearing and non-bearing trees has decreased considerably in the last decade, most of the decrease being in the Eastern Panhandle. There are many reasons for the decline. Many peach trees had been set as fillers in the apple orchard, and as they began to crowd the apple trees they were removed. Lack of care and the ravages of the yellows disease and the peach-tree borer have all taken their toll. Low prices in some years, generally due to variation in time of ripening, bringing our peaches into direct competition with neighboring high producing sections, have made the future look discouraging to anyone considering the making of new plantings in the Eastern Panhandle. Thus, in 1926, due to the generally late season, West Virginia peaches went onto the market in direct competition with New Jersey and Delaware peaches. This resulted in extremely low prices. Normally, West Virginia peaches should precede by a few days those of New Jersey and Delaware.

Generally speaking, there seems to be room for expansion in the peach industry in the counties west of the Alleghenies. Here, there is a strong local demand, particularly near centers of industrial development—a demand that rarely is fully supplied by the few scattered small orchards. Local conditions as regards variety adaptability and market demands should be thoroughly studied before new plantings in this section are decided upon.

Varieties of Peaches

VARIETIES of peaches which are under observation in the Experiment Station orchard at Morgantown are: Alton, Apex,* Artic,* Banner, Belle,* Bilmeyer,* Bray's Rareripe,* Brunner's Favorite,* Burton,* Buttercup, Carman,* Chair's Choice, Champion,* Crawford Late,* Crosby, Cumberland, Day's Nonpariel,* Delicious, Dewey, Early Elberta,* Early Mamie Ross, Easton Cling,* Eclipse, Elberta,* Engles Mammoth, Fox Seedling,* Frank,* Gibson Cling, Greensboro,* J. H. Hale,* Heidelberg,* Hiley,* Japan Blood,* Kalamazoo, Krummel,* Martha Free, Marigold, Massaoit, Mayflower,* Meteor, Niagara, Oriole, Pioneer, Primrose, Radiance, Reeves,* Rochester,* Rosebud, Salwey,* Shippers Late Red, South Haven, Smock, Sunbeam, and Waddell.*

Mayflower

NOTHING is known as to the origin of this variety except that it is said to have originated in North Carolina.

Fruit is medium sized and oval in shape. Skin is heavily pubescent (fuzzy), creamy white with a dark red blush. Flesh is greenish white, juicy, tender, subacid in flavor and clings to the rather large stone. It is only fair in quality and is not a good shipper. Mayflower is the earliest peach in the Experiment Station Orchard, ripening about the middle of June.

Tree is large, vigorous, open, hardy, and productive. It is one of our hardiest varieties in the bud.

Mayflower is an important commercial variety in the South, being grown there chiefly because of its extereme earliness. It undoubtedly would be a profitable variety to plant in a very limited way for local markets in West Virginia.

*Varieties in bearing upon which a report can be made. Other varieties were not old enough to bear at the time this report was prepared.

Greensboro

THIS variety is a seedling of Connett which was grown at Greensboro, North Carolina, about 1891. It was placed on the list of recommended varieties by the American Pomological Society in 1899.

Fruit is medium to large and oblong-oval shape. Skin is tough, creamy white in color, blushed and striped with light and dark red. Pubescence is heavy. Flesh is white, juicy, tender, sprightly, fair in quality, half clinging to the stone. The fruit stands shipping well.

Tree is large, vigorous, spreading, open, hardy, and productive. It is even more hardy in the bud than Mayflower.

Greensboro is one of the best early, white-fleshed peaches, ripening in the Experiment Station orchard about July first. Because of its excellent tree characteristics and the high resistance of its fruit buds to low temperatures, it has been our most reliable cropper at Morgantown. While planting of this variety in a limited way for the local market can be recommended, it cannot be for the general market. It is a white clingstone of mediocre quality. The trade will not buy such a peach when it can get varieties of better quality ripening at the same time from the South.

Carman

THE Carman variety was originated by J. W. Stubenrauch, of Mexia, Texas, in 1889. Its many good qualities so pleased Mr. Stubenrauch that he named it Pride of Texas and began propagating it in 1892. The name later was changed to Carman in honor of the late E. S. Carman, editor for many years of the Rural New Yorker.

Fruit is medium in size and round-oval in shape. Skin is thin, tough, creamy white in color, more or less covered with light red with splashes of darker red. Pubescence is very thick and short. Flesh is white, juicy, and sweet, with a mild pleasant flavor. Stone is almost free. Carman is above the average in quality for a variety of its season. It ripens the latter part of July in the Experiment Station orchard at Morgantown.

The tree is large, vigorous, spreading, hardy in both wood and bud, and very productive.

Carman is one of the best varieties of its season for the home or local market. Like Greensboro, on the general market it generally comes into competition with better quality yellow peaches from the South, particularly Elberta.

Rochester

ROCHESTER came from a seed planted about 1900 on a farm owned by a Mr. Wallen, near Rochester, New York. It was introduced in 1912 by the Heberle Brothers Nurseries of Brighton, New York.

Fruit is medium to large in size, and round-oblate in shape. Skin is thick, tough, lemon yellow changing to orange yellow in color, blushed and mottled with dark red. Flesh is yellow, streaked with red near the pit, juicy, tender, sweet, and highly flavored. Stone is free. Pubescence is very heavy. It ripens the latter part of July.

Tree is large, vigorous, upright-spreading, hardy, and productive. Yellow peach varieties are considered to be more tender in the bud than white ones. Rochester ranks as one of the hardiest of the yellow peaches as measured by resistance to cold.

Rochester is one of the few new varieties that is promising. It has, however, several faults. Its pubescence is so heavy that it detracts a great deal from its appearance. It ripens unevenly, a quality that is good for the local but not for the general market. It seems, however, to be our earliest yellow peach of good quality. It is one of the few varieties that can be recommended for the local market.

Hiley

EUGENE HILEY, Marshallville, Georgia, originated this variety about 1886. It was a seedling that came from a collection of seeds of a number of varieties including Belle and Elberta. It was believed to be a seedling of Belle crossed with Alexander. It was first named Early Belle but later the name was changed to Hiley.

Fruit is medium to above medium in size and roundish-conic to oblong-conic in shape. Skin is thin, tough, greenish yellow with a dull red blush on one side, more or less mottled. Flesh is creamy white, stringy, tender, firm, with a pleasant agreeable flavor. Quality is good. Stone is semi-free to free. The variety ripens early in August.

Tree is medium in size, moderately vigorous, upright spreading, productive. It ranks with Belle in bud hardiness.

Hiley is undoubtedly a good variety to plant in a limited way for the home market. It has not been a profitable variety for the general market in recent years because it comes on the market when it is still well supplied with southern Elbertas.

Belle (of Georgia)

Belle grew from a seed of Chinese Cling planted in 1870 by L. A. Rumph, Marshallville, Georgia. The other parent is believed to have been Oldmixon Free. The American Pomological Society first recommended it in 1899 under the name Georgia, but later changed the name to Belle. Popularly it is still designated "Belle of Georgia."

The fruit is medium in size and roundish-oval in shape. Skin is thin, tender, greenish white to creamy white in color, blushed and mottled with light and dark red. Flesh is white, tinged with red at the pit, juicy, stringy, tender, sweet and mild. Stone is semi-free to free. Quality is good. Pubescence is short, fine and rather thick. Belle ripens about the middle of August—a week or ten days before Elberta.

Tree is large, vigorous, spreading, open, hardy, and very productive. In the Experiment Station orchards Belle is not as hardy in the bud as Greensboro or Carman. Generally, however, a sufficient number of buds come through the winter to insure a heavy crop.

Belle is one of the best varieties of its season, but it is white-fleshed and whenever it ripens at a time that brings it in competition with the Elberta crop from more southerly sections it does not sell well. Because of this, commercial growers have found that profits from this variety have been very uncertain. It is a good variety for the home markets, however, because these usually do not have as heavy competition from other producing sections as do the markets of large cities.

Elberta

Like Belle, Elberta grew from a seed of Chinese Cling planted in 1870 by Samuel H. Rump of Marshallville, Georgia. The Chinese Cling tree from which the seed came, grew near Early and Late Crawford, Oldmixon Free, and Oldmixon Cling trees. Mr. Rump believed that the Early Crawford was the male or pollen parent. The seedling was named Elberta in honor of his wife, Clara Elberta Rump. Elberta has been widely and extensively planted in all peach sections of the United States. It is unquestionably the leading variety as judged by number of trees, productivity, and popular demand in the markets.

Fruit is medium to large in size, roundish-oblong in shape. Skin is thick, tough, deep yellow in color, partly overspread with red and

with much mottling over nearly the whole surface. Pubescence is thick and coarse. Flesh is yellow, juicy, stringy, firm yet tender, sweet or subacid, mild in flavor. Stone is free. Quality is fair to good. It ripens the last of August slightly ahead of J. H. Hale. It is a good shipper and keeper.

The tree is large, healthy, upright-spreading, vigorous, and productive. It is not hardy in the bud as grown in the Experiment Station orchards at Morgantown.

As Hedrick expresses it (Peaches of New York), "Elberta is the cosmopolite of cultivated peaches." Its chief fault under West Virginia conditions is a lack of bud hardiness. The defect manifests itself to a greater degree west of the Alleghenies where it seemingly is not a profitable variety except on very favorable sites. It can safely be recommended, however, as a profitable variety to grow in the commercial fruit districts of the Eastern Panhandle.

Various strains of Elberta have been introduced by nurserymen which are claimed to be superior to the old variety, some of them ripening earlier and some later. Only one has been tested at this Station, an Early Elberta. This strain ripens three or four days earlier than the old variety. The fruits seem to be identical with those of Elberta, but the trees do not grow as vigorously.

J. H. Hale

THIS variety is a chance seedling found by J. H. Hale, South Glastonbury, Connecticut. Probably Elberta is one of its parents. After extensive testing in orchards in Connecticut and Georgia, the new variety was thought worthy of introduction and was sold to the William P. Stark Nurseries of Stark City, Missouri. Advertising and distribution of the variety began in 1912. In the fifteen years that have passed since its introduction it has been extensively planted in all the important peach producing districts of the United States.

Fruit is medium to large in size and nearly spherical in shape. Skin is thick, tough, pale yellow in color covered with mottlings and splashes of attractive light and dark red. Pubescence is light. Flesh is yellow, juicy, fine-grained, and of good quality. Stone is free. It ripens the last of August at about the same time as Elberta or slightly later.

Tree is vigorous, somewhat stubby in its habit of growth, and productive. Trees, as a rule, do not grow as large as those of Elberta. Fruit buds of J. H. Hale are not very resistant to low temperatures, being more tender even than Elberta.

J. H. Hale seems to be a worthy rival of Elberta. Since it ripens at about the same time and must compete with it on the markets, a comparison of the two varieties will be made. Generally speaking, Elberta will be more productice than J. H. Hale because its trees are larger and its fruit buds are more resistant to low winter temperatures. On the other hand, J. H. Hale peaches will run larger in size and will be more attractive than those of Elberta. The quality being also better they generally will sell at a somewhat higher price on markets where they are known.

J. H. Hale as grown in most sections of the East is self sterile—a defineiency rarely found in the peach. Sterility in this case is due to the failure of the pollen to develop normally. The variety must, therefore, be interplanted with other varieties and provision made for cross-pollination by means of bees. When such facilities are provided, J. H. Hale will set heavily and may require some thinning.

J. H. Hale can be recommended for planting both for the local and general market in sections where the Elberta has proved itself to be a profitable variety. Unfortunately a very high percentage of the fruit buds of both of these varieties are annually winter killed in the Experiment Station orchards—so many as to reduce the yield materially. Observations in other sections west of the Alleghenies show a similar condition each year—an extremely high mortality among fruit buds of J. H. Hale and Elberta. A few orchards of these varieties in these sections, due to being placed on exteremely favorable sites, are bearing good crops. This difference in mortality of fruit buds east and west of the Alleghenies is due to different winter weather conditions.* Fruit growers in central and western West Virginia should study their local situation carefully, therefore, before planting J. H. Hale or Elberta.

Salwey

SALWEY is one of the few important varieties that are of European origin. Its history is obscure. One account gives Thomas Rivers, Sawbridgeworth, England, the credit for originating and introducing

*Consult: Knowlton, H. E. and Dorsey, M. J., "A Study of the Hardiness of the Fruit Buds of the Peach," W. Va. Agr. Expt. Sta. Bul. 211, 1927.

it. Another account says it was raised in 1844 by Colonel Salwey, Surrey, England, from the seed of an Italian peach. Few varieties are more widely grown, it being a standard variety in Europe as well as in peach sections of the United States.

Fruit is medium in size and round-cordate* in shape. Skin is thin, tough, greenish-yellow in color with a brownish-red blush, splashed dark red. Flesh is a deep yellow, juicy, stringy, tender, with a sweet, pleasant flavor. Quality is good, particularly for canning, preserving, and evaporating. Fruit ripens the latter part of September.

Tree is medium to large, vigorous, hardy, and productive. Buds are quite hardy for a yellow peach—generally enough survive the winter to insure a crop.

Salwey is an excellent variety for the local market to lengthen the season. As a commercial variety for the general market it is not large enough and attractive enough to compete with Elberta from the northern peach districts.

Krummel

KRUMMEL was originated by a Mr. Krummel of St. Louis, Missouri, some time previous to 1900. It is a well known variety in southern peach regions. It is not grown in the North because it ripens too late and would often be caught by late fall freezes.

Fruit is large in size, spherical in shape. Color is a light lemon yellow, very faintly blushed with carmine. Flesh is yellow, fine in texture, juicy, melting, good in quality. Stone is free. It ripens a little later than Salwey.

Tree is large, vigorous, hardy, fairly productive. It ranks with Salwey in fruit bud hardiness.

Krummel is undoubtedly a good variety for the local market where a very late variety is desired.

*The word "cordate" means heart-shaped.

THE CHERRY

CULTIVATED varieties of cherries belong to two species, Prunus avium, the sweet cherry, and Prunus cerasus, the sour cherry. The Dukes, the most important variety being May Duke, are crosses or hybrids between the two above mentioned species.

Sweet cherries lack adaptability to both soil and climate, consequently they thrive in but few regions, the Pacific Coast and the Great Lakes districts being the most important. Probably the chief drawback to their extensive culture in West Virginia is their lack of winter hardiness in both wood and bud. Warm spells, so characteristic of our West Virginia winters, cause the buds to swell and consequent sudden drops in temperature do great damage to wood and to fruit buds. Chandler says, "the wood of the sweet cherry is slightly more resistant to freezing than that of the peach, a few varieties such as Lyons and Wood being considerably more resistant. The tree, however, does not have as great ability as the peach tree to recover from the killing of a large part of the sapwood; and so, following some freezes, a larger percentage of sweet cherry trees than of peach trees are lost; though this is not generally true." Considerable injury to the wood has occurred in the variety orchard at Morgantown during several winters, one entire block of Schmidt being so badly injured that it had to be removed.

The sour cherry is one of our most cosmopolitan of fruits, often thriving with very little care. On the other hand, it will repay good culture as well as any of our fruits. All varieties are quite resistant to low temperatures both in wood and bud. Due to this fact their limited culture in West Virginia should be encouraged wherever there are markets to be supplied.

The Dukes, hybrids between the sweet and sour cherries, have some of the characteristics of both. Their culture in home orchards is recommended wherever a wide variety is desired. Uneveness in ripening, however, of many of the varieties make them poor for commercial markets.

Varieties of Sweet Cherries

THE following varieties of sweet cherries are under test in the variety orchards at Morgantown: Bing, Black Tartarian, Governor Wood, Ida, Lambert, Mercer, Napoleon, Schmidt, Windsor, and Yellow Spanish. Of these varieties, Ida, Wood, Tartarian, Napoleon,

and Windsor have done best. Yellow Spanish and Lambert are high in quality but lack hardiness. Mercer is hardy but the quality is poor.

Ida

IDA was first grown as a seedling by E. H. Cochlin of Shepherdstown, Pennsylvania, and named after his daughter. The fruit ripens about the first week in June. It is hardy in the bud, and consequently bears large crops. Fruit is soft fleshed, yellowish red in color, of good size, but mediocre in quality. The trees are healthy and vigorous. It can be recommended for trial in the home orchard because of its hardiness and productivity.

Wood (Governor Wood)

WOOD is a seedling raised by Professor J. P. Kirtland, of Cleveland, in 1842. It was named in honor of Reuben Wood, at one time Governor of Ohio.

The fruit ripens early, generally about the first week in June in the latitude of Morgantown. Trees are hardy and vigorous. The fruit is of good size and excellent quality, yellowish white in color, tinged with crimson. The flesh is soft, however, so it will not stand shipment. It is a good, early variety for the home orchard.

Tartarian (Black Tartarian)

THIS variety came originally from Russia. It was introduced into America by William Prince, of Flushing, New York, early in the nineteenth century. Probably no cherry variety is better known than Tartarian, it being grown over all Eastern United States. It is adapted to widely different soils and climates, is fruitful and hardy, and has excellent fruit characters that make it a general favorite.

Tartarian ripens with Ida. The fruit is glossy black in color with handsome purplish red flesh of a sweet, rich flavor. Its comparatively small size is a drawback for the commercial planter, as well as is its soft flesh. It is one of the best, however, for the home orchard.

Napoleon

NAPOLEON is a very old variety of unknown origin. It was grown over all Eastern Europe early in the eighteenth century. It was introduced into America in the early quarter of the nineteenth century.

On the Pacific Coast it is extensively grown and sold under the name Royal Ann.

Napoleon ripens about the second week in June. It is a large, firm fleshed cherry, reddish yellow in color, of the best quality, admirably adapted for dessert purposes as well as for canning. The cherries carry well, which makes the variety a favorite with fruit dealers. The tree is vigorous, hardy, and healthy.

Windsor

THIS variety originated in the latter half of the nineteenth century on the farm of James Dougall, of Windsor, Canada.

The fruit ripens late, generally about the third week in June in the latitude of Morgantown. It is medium sized, dark red in color, firm fleshed, and of good quality. The tree is hardy and vigorous but comes into bearing late. It is probably the most widely grown of the late sweet cherries.

Varieties of Sour Cherries

EARLY Richmond, English Morello, Duchess, Dyehouse, Marguerite, and Montmorency are the varieties that have been under trial in the Experiment Station orchards at Morgantown. Of these, Dyehouse, Early Richmond, English Morello, and Montmorency can be recommended for trial in West Virginia.

Dyehouse

THIS cherry was probably grown from a pit more than sixty years ago by a Mr. Dyehouse, of Lincoln County, Kentucky.

The fruit strongly resembles Early Richmond but is smaller and four or five days earlier. Due to its defect in size it is not as popular as Early Richmond. It is also less productive, and should be grown for home and market only wherever an earlier variety than Richmond is desired.

Richmond (Early Richmond)

EARLY RICHMOND is one of the oldest cherry varieties, being known in England as Kentish. It was brought to America early in the nineteenth century and was called Early Richmond because William Prince obtained his first trees of the variety from Richmond, Virginia.

The fruit ripens with the earliest of the sweet cherries. It is medium in size, light red in color, and fair in quality. The tree is hardy, vigorous, and fruitful. It is the best sour cherry of its season.

English Morello

THIS variety probably originated in either Holland or Germany. It was taken to England and France.

The fruit is medium in size, dark red in color with a soft, dark red flesh which is acid and often astringent until thoroughly ripe. It is probably the best of the sour cherries for preserving. While the trees are hardy and vigorous they never grow large and consequently should be set closer than Richmond or Montmorency. It ripens four or five days after Montmorency.

Montmorency

THE Montmorency was introduced into America very early, the exact date not being known. Its origin is obscure, but probably occurred in France. It has been confused with other varieties, particularly Richmond.

Montmorency is unquestionably the most popular sour cherry grown in America. Hedrick says that half the cherry trees in New York, sweet or sour, are Montmorencies and at least three-fourths of all sour cherry trees are of this variety. The fruit is larger than Richmond, of better quality, firmer fleshed, and thicker skinned. It ripens the last week in June.

Varieties of the Duke Group

THREE Duke (crosses between the sweet and cour cherry) varieties have been under test in the Experiment Station orchards at Morgantown. They are May Duke, Abbesse d' Oignies, and Royal Duke. All three are worthy of trial in the home orchard.

May Duke

T is believed that this variety originated in a district in France known as Medoc. Wm. Prince mentions it as being one of the first cherries introduced into America. It is now one of the best known and widely distributed varieties of cherries.

The fruit ripens with the earliest of the cherries. It is of moderate size, dark red in color with a soft, medium to dark red flesh and subacid but pleasant flavor. Tree is hardy, vigorous, and fruitful.

Abbesse d' Oignies

ACCORDING to Hedrick, of the New York Agricultural Experiment Station, this variety has so far been tried commercially only in the Middle West. At the New York Station it is one of the best of the Dukes. It is believed to have originated in Belgium about the middle of the nineteenth century.

The fruit ripens about the middle of June in the latitude of Morgantown. The tree is vigorous and hardy, and bears good crops of large, dark red cherries of excellent quality—probably of better quality than most of the varieties of Dukes. It also has their fault of tending to ripen unevenly.

Royal Duke

THE origin of this variety is not known, but it was in cultivation in Europe at least as early as the latter half of the eighteenth century.

The Royal Duke variety is an excellent one to follow May Duke, which it closely resembles. It differs from it in ripening a few days later; the cherries are larger and lighter red in color. The tree is vigorous, hardy and fruitful.

THE PEAR

THE production of pears in West Virginia should be limited to the small orchard supplying a local trade. A few commercial orchards have been planted in the past, but they have not been successful. Probably the prevalence of fire blight has been the chief cause of failure, spring and summer weather conditions being particularly favorable for the rapid spread of this disease.

Varieties of Pears

IN a limited way, the West Virginia Agricultural Experiment Station has been carrying on variety tests with pears. The following varities are under observation: Beurre' d' Anjou, Duchesse d' Angouleme, Bartlett,* Becurre' Bosc, Beurre' Clairgeau, Clapp's Favorite,

Doyenne' du Comice, Flemish Beauty, Garber, Howell, Keiffer,* King Karl, Koonce, Lawrence, Lincoln, Seckel,* Sheldon, Vermont Beauty, Wilder, and Winter Nelis.*

Bartlett

BARTLETT is an old English variety. It was brought to this country about 1797 by James Carter of Boston for Thomas Brewer of Roxbury, Massachusetts, under the name of Williams' Bon Cretien, by which name it was then and still is known both in England and France. In 1817 Enoch Bartlett got possession of the Brewer estate and not knowing the true name of the variety gave it the name Bartlett.

Fruit is medium to large with a clear yellow color, generally with a faint blush. Skin is thin, tender, smooth, sometimes slightly russetted. Flesh is fine grained, melting, buttery, very juicy and good in quality. It keeps and ships very well. It ripens late in August.

Tree is medium in size, upright, hardy, comes into bearing early, and is very productive. It is very susceptible to fire blight, however.

Bartlett is unquestionably the best commercial variety in the United States. Its great adaptability to different climates, soils and situations help to make it so. It is a variety that can be recommended for planting in a limited way for the home market.

Seckel

SECKEL originated as a chance seedling on a tract of land south of Philadelphia near the Delaware River. The land finally came into possession of a Mr. Seckel, who gave the pear his name and introduced it. It soon was widely disseminated and everywhere became popular. Next to Bartlett and Kieffer, it is now more grown than any other variety.

Fruit is small, uniform in size and shape. Skin is smooth, dull, of a greenish yellow color generally overlaid with a russet brown, sometimes with a russet red blush. Flesh is white tinged with yellow, melting, tender, buttery, juicy, with a rich spicy flavor. The quality is excellent. Fruit ripens in September.

Tree is large, vigorous, upright-spreading, bushy, hardy, long lived, very productive, but late in coming into bearing. It is remarkably free from fire blight, but susceptible to scab.

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*Varieties in bearing upon which a report can be made. Other varieties were not old enough to bear at the time this report was prepared.

Seckel is a variety that can be safely recommended for the home market because of its wide adaptability and high quality of fruit.

Kieffer

KIEFFER is another variety that originated as a chance seedling. It was found growing in the nursery of Peter Kieffer near Philadelphia. The seed parent was the Chinese Sand pear. It is probable that the male or pollen parent was Bartlett since there was some Bartlett trees growing near by. Mr. Kieffer first noticed it because of its peculiar habit of growth and saved it. It first fruited in 1863. After being exhibited at the Centennial Exposition in 1876 it was named Kieffer. Kieffer is more commonly grown than any other variety of pear in North America.

Fruit is above medium to large. Skin is thick, tough, yellow in color, blushed with red. Flesh is yellowish-white, granular, coarse, crisp, juicy, and of poor quality. Kieffer ripens in October. It is a good shipper and keeper.

Tree is of medium size, vigorous, upright, hardy, and very productive. It is quite free from attacks of fire blight.

Kieffer is cultivated extensively because it is easy to grow. It is poor in dessert quality, but makes a good canned product. Kieffer can, therefore, be recommended for the home orchard where a canning variety is wanted.

Winter Nelis

THIS variety was originated by Jean Charles Nelis of Mechlin, Belgium, early in the nineteenth century. It was named Winter Nelis in honor of the originator, by Van Mons, the great Belgian fruit breeder. In 1823 scions were sent to John Lowell, Roxbury, Massachusetts. The variety soon became widely disseminated and met with great favor. It is now the standard winter pear in North America.

Fruit is small to medium in size. Skin is thick, tough, roughened with much russet. Color is greenish yellow covered with dots, streaks and patches of grayish russet. Exposed cheek is usually blushed with red. Flesh is yellowish-white, tender, melting, very juicy, with a sweet, aromatic flavor. Quality is very good. It ripens in late fall but can be kept in cold storage until late winter.

Tree is medium in size and vigorous, spreading, hardy, productive, coming into bearing early. It is quite free from blight.

Winter Nelis is a variety that can safely be recommended for the home market. While the fruit is not attractive in appearance it makes up for it in high quality and generally sells for good prices.

THE PLUM

THE PLUM, like the pear, should only be planted in West Virginia by the grower catering to local market demands. Since West Virginia is near the southern limit of range for the growing of the European plum there is a question as to whether it thrives well enough here to make it possible for us to compete with the northern plum districts. Certainly the varieties grown in the Experiment Station orchards at Morgantown are slower in coming into bearing than are the same varieties in Michigan and New York. Since varieties of the European plum can be grown at least fairly well, there really is little reason for the cultivation of the many varieties of native and Japanese plums. Most Japanese varieties bloom so early that they are killed by frosts.

Varieties of Plums

A NUMBER of varieties are being tested. The list includes Abundance, Bradshaw, Burbank, Early Gold, French Prune,* German Prune,* Gold, Italian Prune,* Moore's Artic,* Pearl, Pond,* Red June, Reine Claude, Satsuma, Shropshire Damson,* Stark Green Gage,* and Tatge.

Bradshaw

THE ORIGIN of this variety is obscure. Some have believed it of American origin, but since it is identical with Large Black Imperial it must be of foreign origin. It was named and described by C. M. Hovey in 1846 in his Magazine of Horticulture with the following explanation: "For the want of a name to distinguish a very large and excellent plum, exhibited for three or four years in succession by E. E. Bradshaw, Esq., Charlestown, we have called it the Bradshaw plum." It was really the Large Black Imperial, so the name Bradshaw is in-

*Varieties in bearing upon which a report can be made. Other varieties were not old enough to bear at the time this report was prepared.

correct according to the rule of priority. Bradshaw is now one of the leading varieties in the Eastern States.

The fruit is medium to large and oval in shape. Skin is thin, somewhat tough, and of a dark, reddish-purple color overspread with a thick bloom.* Flesh is dull yellow, juicy, fibrous, tender, sweet, pleasant, good in quality. Stone is semi-free. It ripens early in August, is a good keeper, and ships well. It is very subject to brown rot.

The tree is large, vigorous, somewhat bushy, hardy, and productive. It is late in coming into bearing.

Bradshaw seems to be worthy of trial in West Virginia because of its good tree characters and large, attractive fruits.

Reine Claude (Green Gage)

REINE CLAUDE is the principal variety of a group of plums known as the Reine Claude group. Where it originated no one knows. The group has been recognized and described by pomological writers for three centuries. Its later history is better known. It was named after Queen Claudia, wife of Francis I of France, the fruit having been introduced into that country during their reign. The name Green Gage comes from the fact that it was introduced into England by the Gage family, prominent English horticulturists. Because of its great popularity it was brought to America by the early colonists. Reine Claude, the principal variety of the group, is one of the standard Green Gages grown in America.

Fruit is medium in size, roundish-oval in shape. Skin is tough, yellowish green, becoming a golden yellow at full maturity, overspread with a thin bloom. The exposed side is often mottled with red. Flesh is greenish yellow to golden-yellow, juicy, firm, sweet, mild, and of the highest quality. Stone is semi-clinging. Fruit often cracks badly if rain occurs at ripening time. It ripens late in August.

Tree is of medium size and vigor, round-topped, hardy, and productive, but seems to be quite susceptible to sun-scald.

Reine Claude is a good variety for the local trade because of its high quality and productiveness.

*A delicate, white, somewhat powdery substance on the surface of the fruit.

Shropshire (Damson)

SHROPSHIRE has been under cultivation for a long time, being an English variety which originated sometime in the seventeenth century. American writers of pomology did not mention it, however, until the nineteenth centry. It was recommended for planting by the American Pomological Society in 1875.

Fruit is of good size for a Damson and is oval in shape. Skin is thin, tender, of a purplish-black color covered with thick bloom. Flesh is yellow, juicy, firm, tart, and sprightly. Stone is clinging. It may be eaten raw when fully ripe, but its chief value is in its culinary qualities. It ripens in September.

Tree is large, vigorous, hardy, and very productive. It is not so thick-topped as other Damsons. Leaves are very subject to leaf spot.

Shropshire is probably the best known of all the Damsons and should be in every home market orchard.

Italian Prune

THE ITALIAN PRUNE originated in Italy at least a century ago and is one of the common varieties. It was grown in England prior to 1831 since the catalog of the London Horticultural Society of that date lists it. William Prince described it a year later as being an excellent prune recently introduced from Europe. It is now one of the most widely grown of all plums, a leading variety on the Pacific Coast as well as on the Atlantic.

The fruit is medium in size and long-oval in shape. Skin is thin, somewhat tough, of a dark purplish color overspread with a thick bloom. Flesh is greenish yellow, juicy, firm subacid, and of very good quality. Stone is free. It ripens the latter part of September, and keeps and ships well.

The tree is medium in size, vigorous, spreading, low-topped, comes into bearing quite early, and is productive. It seems to be somewhat sensitive to soils and does not stand dry, hot weather well.

Italian Prune is popular because of the many good all-round qualities of its fruit. It is excellent when stewed and makes a very good canned product, and is one of the leading varieties in the prune growing states of the Pacific Northwest. When fully ripened it is excellent for eating raw. Italian Prune can safely be planted for the local market in West Virginia.

STERILITY OF TREE FRUITS

MANY of the varieties of tree fruits when planted in solid blocks set poorly or not at all, due to the fact that they are more or less self-sterile, that is, their own pollen will not fertilize them. This is particularly true of varieties of the apple, pear, plum, and sweet cherry. With such varieties adequate provisions must be made for cross-pollination, if good crops are to be obtained. This is done by inter-planting varieties and where necessary, placing bees in the orchard to carry the pollen from one variety to another. Generally speaking, a row of the pollinator to four or five of the main variety will result in sufficient cross-pollination to set a crop provided, of course, bees are present in sufficient numbers. It should be emphasized that fruit pollen is not carried by the wind, but by insects, particularly bees.

Best Results by Inter-Planting

Many varieties of apple are self-fertile. Grimes. Jonathan, Northwestern, York, Ben Davis, Transparent, and Wealthy, seem to be able to set enough fruit for a crop without cross pollination. Delicious sets poorly when planted by itself, while Black Twig, Winesap, and Stayman set poorly or not at all when planted alone in solid blocks. Grimes, Jonathan, Wealthy, and Transparent are good pollenizers for Delicious. The same varieties with the addition of Delicious are good pollenizers for Stayman and Winesap. Grimes does not seem to be a good pollenizer for Black Twig. A list of pollenizers for Black Twig would include Delicious, Jonathan, Wealthy, and Transparent. York may cross fertilize any of the above varieties, but generally blooms too late for best results.

Choose Varieties That Will Cross

All the standard varieties of peaches are self-fertile except J. H. Hale. This variety consequently must be planted close to others. All the well-known commercial varieties seem to be equally capable of fertilizing the J. H. Hale.

Most Peaches Self-Fertile

Practically all varieties of sweet cherries are self-sterile. A few varieties are inter-sterile, that is, they will not cross-fertilize each other. The varieties described in this circular are more or less sterile, but will adequately cross fertilize. Tartarian is a particularly good pollenizer.

The varieties of Duke cherries are partially self-sterile. They will set a sufficient number, however, to insure a good crop under normal conditions.

Few of the standard varieties of plums and pears are self-fertile. Shropshire Damson seems to set well when planted by itself, but Reine Claude, Bradshaw, and Italian Prune will set much better in mixed plantings.

The varieties of pears, Bartlett, Keiffer, Seckel, and Winter Nelis, should be interplanted, if maximum crops are to be obtained.

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Other bulletins and circulars published by the Experiment Station, College of Agriculture, which are of interest to orchardists and fruit growers include:

Bul. 174, The Fertilization of Apple Orchards, I.

Bul. 183, Fertilizing Peach Trees.

Bul. 203, The Fertilization of Apple Orchards, II.

Bul. 209, Dusting vs. Spraying in the Apple Orchard.

Bul. 211, Hardiness of the Fruit Buds of the Peach.

Bul. 214, Effect of Height of Head on Young Apple Tree Growth and Yield.

Cir. 37, Fertilizing Peach Trees (Abstract of Bulletin 183).

Cir. 54, Orchard Spraying in West Virginia.

Come to Morgantown

An invitation is extended to West Virginia farmers and fruit growers to visit the experimental orchards of the College of Agriculture, West Virginia University, and inspect at first hand the varieties of fruits described in this bulletin, as well as learn about results of various cultural methods, systems of pruning, and fertilization practices.

Special Parties

Those who come to visit the farms in small groups while passing through on a vacation or making a special trip can obtain a guide to show them over the farms and explain the experimental work by applying at the Horticulture office in the College of Agriculture (Oglebay Hall).

Farmers' Field Day

Each year a Farmers' Field Day is held during mid-summer at the College farms. This occasion provides an excellent opportunity to see the orchards in production and to learn of the experimental work being done.

Farmers' Week

Another opportunity to visit the orchards and hear the latest discoveries discussed is afforded at the annual Farmers' Week. Pruning demonstrations are usually given at this time, and other practical work such as making spray solutions, grafting, etc., engaged in.

Whether it suits you best to come in Summer or winter, on a special occasion or otherwise, come and avail yourself of the opportunities thus afforded.

It Pays to Know

THOUSANDS of dollars are lost annually by West Virginia farmers because of lack of information as to the best method of procedure in carying on their farm operations, or because of failure to apply the knowledge already gained.

WHY take chances? If you have some farm problem about which you are in doubt as to the best method of solution, why not consult your county agricultural agent? In case he is unable to give you the information and help needed, he will call on a specialist from the College for further aid.

MANY bulletins and circulars have been published by the Extension Service and the Experiment Station giving helpful suggestions based upon experimental work which has been conducted to help you and your neighbors realize greater returns from your farming operations. Write for a list of available publications, and then request the ones of interest to you. They will be sent without cost and may prove quite valuable.

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